

Tracy Van Holt:
Ok thanks.

Slide 1. I am amazed at all of the applications of Giovanni. This research links environmental change (measured with Giovanni and other tools) with fisher success.

I hope that we can use tools such as Giovanni to better understand how people adapt to environmental change. I want to thank the granting agencies and collaborators who supported this research.

I had a lot of participation from fishers and a lot of support from NASA for this research.

James Acker:
Yum.

Tracy Van Holt:
Slide 2. Chileans have a new way to govern benthic (bottom dwelling) fisheries because of locos.

Most Chileans know the SCIENTIFIC name of this species because they are so tasty (a substitute for abalone on global markets) and they are the most valuable (economically) to fishers.

The name loco means chief or big head in Mapudungun because these are top carnivores in the system.

Slide 2: The harvest was sustainable, crashed, and then recovered. The management system allows fishers to have exclusive access to parcels of the coast.

The management system allows fishers to have exclusive access to parcels of the

coast.

This is an example of one parcel

Slide 3. One of the most important consequences is that fishers can't relocate to a different management area.

So fishers are tied, for some resources to their area

Slide 4. The skipper effect theory addresses why some fishers catch more fish than others (success). If technology explains success (catch per unit effort, for example), then a program to buy boats out of the fishery makes sense. If not, the program wouldn't help.

Slide 5. Research addressed two research questions (seen on slide)

Slide 6. I compared the closed access loco fisheries to congrio, which is an open access fishery (fishers can harvest anywhere)

Slide 7. Fisheries management areas are in black polygons along the coast. I compared fishers that worked in management areas that were similar in environmental conditions (little upwelling, similar continental shelf). The management areas differed in their exposure to terrestrial nutrient input from tree plantations.

Slide 8. Landsat images show increases in tree plantations from 1985-2001 (in red). The most changes were in watersheds 1 and 3 (numbers in images).

Slide 9. Chlorophyll-a concentrations (circle on map) are higher in areas near tree plantations (shaded in red)

Slide 10. Loco shells vary—those from management areas that are closer to plantations have more epibionts and endobionts (organisms on shell). As you can see there are

some shells with no organisms living on the shell. This research is published in Global Change Biology 2012

Slide 11. This work focuses on the northern portion of my overall study. I worked with fishers that harvested from management areas (black polygons along the coast). These same fishers also work offshore (outside management areas)

Slide 12. The independent variables include experience and technology (traditional measures of the skipper effect) and environmental and geospatial data (that is new to this field). The dependent variable is price (as a proxy for success)

Slide 13. Independent Variable Experience: was measured by interviewing fishers about what they harvest, how long they have fished, where they harvest, and formal education.

Zhen Liu:
yes! Experience!

Tracy van Holt:
so many measures of experience

Slide 14. Independent variable Technology: assessed how many boats fishers have. What matters most is whether you have a boat or not, rather than the type of boat that you have.

James Acker:
laughter

Tracy van Holt:
Slide 15. Independent variable Environment included the condition of the locos (# organisms on and inside the shell). You can see that the management areas that are red have more organisms on the shells (also more influence from landscape change).

so more red, the locos were lower quality--next

Slide 16. Independent variable Environment: included land use change (tree plantation increase).

again--plantations were important land use change

Slide 17. Independent variable Environment: included chlorophyll-a concentration in the management areas (per Giovanni), and the chlorophyll-a which is higher in areas with more plantations

Slide 18. Independent variable Geospatial: how far fishers travel to harvest, size of management area, etc.

geospatial characteristics are important as well--not everyone has to travel as far.

Slide 19. Dependent variable Price: How much fishers reportedly were paid for their resources.

So these fisheries are not like fisheries in NC for example, where price changes in minutes
prices are stable

ok results, I think I can catch up I hope you are all following!

Slide 20. Results: Loco: the organisms on the shell (epibionts/endobionts) had a huge negative effect on price. Chlorophyll-a has a positive affect to some point but when there is too much chlorophyll-a, then the organisms have more epibionts/endobionts (see GCB paper)

it is VERY important that technology and experiences doesn't account for change

Slide 21. Results: Congrio: Chlorophyll-a has a positive influence on price. Fisher experience and technology counts here. Fishers can compensate for environmental change with experience (knowledge) and technology.

Here technology and experience counts

Slide 22. Conclusion: Restricting access to fisheries in cases where environmental change occurs (landscape change, for example) may limit a fisher's ability to compensate for change.

Slide 23. Conclusion: Fishers move out of the fishery and move offshore to where they can use their experience and skill counts.

Slide 24. From slide: How might Giovanni be used to advance our understanding of landscape change and the consequences for fishers and coastal economies worldwide? What about other areas of research? How can we tie Giovanni data to understand how people adapt to environmental change?

whew, thank you James!

James Acker:

Good questions. I think the availability of high resolution land data and higher temporal resolution data of all kinds enables more applications research

No problem!

Tracy van Holt:

I am very interested in integrating on the ground interview data with remotely sensed data. There is a lot of work to be done there.

James Acker:

I found it very interesting that higher chlorophyll correlated with increased parasitic infestation on the locos. Makes sense, but I've never heard of that observation before.

I think the next talk will be very interesting and quite related to what Tracy just presented.

Tracy van Holt:

What we think is that the loco shells are the substrate

My GCB paper talks about this.

So some chlorophyll-a is good, but too much is not.

James Acker:

You would expect that the parasites enjoy better feeding conditions under higher productivity waters.

Tracy van Holt:

yes.

sorry, chlorophyll-a is good for the epibionts and endobionts, but not necessarily for the locos